KEANEKARAGAMAN MAKROFAUNA TANAH PASCATAMBANG BATUBARA DENGAN UMUR REVEGETASI BERBEDA DI PT KUANSING INTI MAKMUR KABUPATEN BUNGO JAMBI

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Abstrak

Aktivitas penambangan batubara dengan metode tambang terbuka menyebabkan degradasi sifat fisik, kimia, dan biologi tanah yang berdampak pada menurunnya keanekaragaman makrofauna tanah. Revegetasi merupakan salah satu upaya rehabilitasi untuk memulihkan kondisi lahan pascatambang, namun efektivitasnya perlu dievaluasi melalui bioindikator tanah. Penelitian ini bertujuan menganalisis keanekaragaman makrofauna tanah pada lahan pascatambang batubara dengan umur revegetasi yang berbeda serta mengkaji hubungan antara umur revegetasi dengan keanekaragaman makrofauna tanah di PT Kuansing Inti Makmur, Kabupaten Bungo, Jambi. Penelitian menggunakan metode survei dengan penentuan lokasi secara *purposive sampling* pada empat tipe lahan, yaitu hutan sekunder, lahan sedang ditambang, revegetasi umur 4 tahun, dan revegetasi umur 12 tahun. Pengambilan makrofauna dilakukan menggunakan metode *hand sorting* dengan bantuan monolith berukuran 30 x 30 cm dan *pitfall trap*, kemudian diidentifikasi hingga tingkat morfospesies. Keanekaragaman dianalisis menggunakan indeks Shannon-Wiener (H'), indeks kekayaan Margalef (DMg), dan indeks kemerataan (E), sedangkan hubungan umur revegetasi dengan keanekaragaman dianalisis menggunakan regresi linear. Hasil penelitian menunjukkan bahwa ditemukan 594 individu yang tergolong ke dalam 10 ordo, 23 famili, dan 41 morfospesies. Lahan revegetasi umur 12 tahun memiliki jumlah ordo, kelimpahan individu, indeks keanekaragaman (H' = 1,455), indeks kekayaan (DMg = 1,447), dan indeks kemerataan (E = 0,662) tertinggi, sedangkan lahan sedang ditambang memiliki nilai terendah. Umur revegetasi berhubungan positif terhadap indeks keanekaragaman dan indeks kekayaan, tetapi tidak berpengaruh nyata terhadap indeks kemerataan. Hasil penelitian menunjukkan bahwa bertambahnya umur revegetasi berkaitan dengan pemulihan komunitas makrofauna tanah pada lahan pascatambang batubara.

Kata kunci: Bioindikator, kelimpahan, komunitas, morfospesies, rehabilitasi

SOIL MACROFAUNA DIVERSITY IN POST-COAL MINING LAND WITH DIFFERENT REVEGETATION AGES AT PT KUANSING INTI MAKMUR, BUNGO REGENCY, JAMBI

Abstract

Open-pit coal mining degrades the physical, chemical, and biological properties of soil, leading to a decline in soil macrofauna diversity. Revegetation is one of the rehabilitation efforts undertaken to restore post-mining land conditions; however, its effectiveness needs to be evaluated using soil bioindicators. This study aimed to analyze soil macrofauna diversity in post-coal mining land with different revegetation ages and to examine the relationship between revegetation age and soil macrofauna diversity at PT Kuansing Inti Makmur, Bungo Regency, Jambi. A survey method was employed using purposive sampling to select four land types: secondary forest, active mining land, 4-year revegetated land, and 12-year revegetated land. Soil macrofauna were collected using the hand-sorting method with a 30 × 30 cm monolith and pitfall traps, and were identified to the morphospecies level. Diversity was assessed using the Shannon–Wiener diversity index (H'), Margalef richness index (DMg), and Pielou's evenness index (E). The relationship between revegetation age and soil macrofauna diversity was analyzed using linear regression. The results showed that a total of 594 individuals were recorded across 10 orders, 23 families, and 41 morphospecies. The 12-year revegetated land exhibited the highest number of orders, individual abundance, Shannon–Wiener diversity index (H' = 1.455), Margalef richness index (DMg = 1.447), and Pielou's evenness index (E = 0.662), whereas the active mining land showed the lowest values. Revegetation age was positively associated with the diversity and richness indices but had no significant effect on the evenness index. These findings indicate that increasing revegetation age is associated with the recovery of soil macrofauna communities on post-coal-mining land.

Keywords: Abundance, bioindicator, community, morphospecies, rehabilitation